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EXAMINER

LABALLE, C

ART UNIT

PAPER NUMBER

21M1/0925

2102

DATE MAILED:

09/25/95

WESTINGHOUSE ELECTRIC CORP.
LAW DEPT-INTELLECTUAL
PROPERTY SECTION
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PITTSBURGH, PA 15222-1384

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined Responsive to communication filed on _____ This action is made final.

A shortened statutory period for response to this action is set to expire 3 (Three) month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. Notice of References Cited by Examiner, PTO-892.
2. Notice of Draftsman's Patent Drawing Review, PTO-948.
3. Notice of Art Cited by Applicant, PTO-1449. (3)
4. Notice of Informal Patent Application, PTO-152.
5. Information on How to Effect Drawing Changes, PTO-1474.
6. _____

Part II SUMMARY OF ACTION

1. Claims 1-21 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. Claims _____ have been cancelled.

3. Claims _____ are allowed.

4. Claims 1-21 are rejected.

5. Claims _____ are objected to.

6. Claims _____ are subject to restriction or election requirement.

7. This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. Formal drawings are required in response to this Office action.

9. The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are acceptable; not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been approved by the examiner; disapproved by the examiner (see explanation).

11. The proposed drawing correction, filed _____, has been approved; disapproved (see explanation).

12. Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has been received not been received been filed in parent application, serial no. _____; filed on _____.

13. Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. Other

EXAMINER'S ACTION

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The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1-2, 4,7-8 and 20-21 are rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Fujii.

Tanaka discloses the electric vehicle drive system essentially as claimed except for utilizing spray nozzles at the ends of the machine.

Fujii teaches that it is well known to provide spray nozzles at each end of the dynamoelectric machine in order to spray cooling fluid directly onto the end turns of the stator winding to produce an enhanced cooling arrangement resulting in improved machine performance (see lines 60-75, col.1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized, in the drive motor of Tanaka, spray nozzles at the ends of the machine to directly spray cooling fluid onto the windings to enhance the

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cooling of the machine and to improve the performance of the machine, as disclosed by Fujii.

Claims 3 and 5-6 are rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Fujii and further in view of Nakamura.

Tanaka and Fujii disclose the drive motor essentially as claimed except for mounting the spray nozzles on the end bells of the motor and utilizing the specific number of nozzles.

Nakamura teaches that it is well known to mount the spray nozzles of a cooling system on the end bells of the motor housing (see figure 2). Nakamura also discloses providing separate nozzles for spraying on the rotor and the end of the stator. As can be seen in Nakamura, locating the spray nozzles on the end bells of the motor housing allows some of the nozzles to be easily directed onto the rotor assembly. The motor is more efficiently cooled and can be made smaller with an increased output (see lines 54-68, col.1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have mounted the spray nozzle arrangement of Tanaka and Fujii on the end bells of the motor in order to allow cooling of the rotor, as shown by Nakamura, to enhance cooling and allow reduction of the motors size with increased output.

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In regards to utilizing a specific number of spray nozzles, it would have been an obvious matter of engineering design choice to have utilized nine stator nozzles and two rotor nozzles, since applicant has not disclosed that this specific number of nozzles solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with more stator or rotor nozzles.

Claims 9-14 are rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Fujii and further in view of Butman, Jr.

Tanaka and Fujii disclose the drive motor essentially as claimed except for coating the rotor slots with a ceramic material.

Butman, Jr. teaches coating the inner surface of a rotor slot with silicon carbide (layer 42), a ceramic material to prevent corona and flashover between the conductors and the rotor core.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have coated the slots of the rotor of Tanaka and Fujii with a ceramic material in order to insulate the conductors and to prevent corona and flashover, as disclosed by Butman, Jr.

In regards to casting the conductor in the slots, the method of forming the device is not germane to the issue of

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patentability of the device itself. Therefore, this limitation has not been given patentable weight.

As to utilizing copper or aluminum for the conductor material, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized copper or aluminum for the rotor conductor of Tanaka and Fujii, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 15 and 16 are rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Hernden.

Tanaka discloses the electric drive motor essentially as claimed except for forming the housing from magnesium.

Hernden discloses forming the housing of a fluid cooled motor from magnesium alloy. The use of magnesium alloy is well known in the art where the thermal properties of the housing are important.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the housing of Tanaka from magnesium, as disclosed by Hernden, in order to take advantage of the materials well known and desirable thermal properties.

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Claims 17-18 are rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Cathey.

Tanaka discloses the drive motor essentially as claimed except for forming the grooves in the inner surface of the stator casing and on the outer surface of the stator.

Cathey teaches forming a liquid cooled machine with a groove for flowing coolant between the stator and the motor casing. The grooves can be formed in the inner surface of the casing or the outer surface of the stator (see lines 14-23, col.3). Cathey discloses that the arrangement allows the size of the motor to be reduced by efficiently cooling the motor (see lines 58-60, col.1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the grooves in the inner surface of the stator casing and on the outer surface of the stator of Tanaka in order provide efficient cooling for the motor, as disclosed by Cathey.

As to alternating forming the slots on the stator and the casing, it would have been obvious to one having ordinary skill in the art at the time the invention was made to alternately formed the slots on the stator and the casing, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

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Claim 19 is rejected under 35 U.S.C. § 103 as being unpatentable over Tanaka in view of Jarczynski.

Tanaka discloses the electric motor essentially as claimed except for providing a manifold on the rotor to direct fluid to the passage and slots of the rotor.

Jarczynski teaches providing a manifold (70) at the ends of the rotor to direct cooling fluid to and from the passages and slots of the rotor.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided a manifold on the rotor of Tanaka in order to direct the cooling fluid to the passages and slots of the rotor, as disclosed by Jarczynski.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clayton E. LaBalle whose telephone number is (703) 308-0519. The examiner can normally be reached on Monday-Thursday from 6:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Stephan, can be reached on (703) 308-2826. The fax phone number for this Group is (703) 305-3431(32).

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1782.



LaBalle

September 10, 1995



Clayton E. LaBalle
Primary Examiner
Art Unit 2102